

Renewable Energy Question #1: How much RE will be operational in MI by the end of 2015? What is the total dollar amount of MI renewables investment to date and expected when the 10% goal is reached in 2015?

According to Appendix H of the February 2013 MPSC report on the implementation of P.A. 295, there is currently 1,192 MW of renewable energy capacity online or expected to be online by end of 2013 to meet P.A. 295 compliance. According to Appendix I, an additional 133 MW of wind pre-dates P.A. 295. In addition, according to the Energy Information Administration, there are 212 MW of biomass, 236 MW of hydropower and 152 MW of landfill gas capacity that are in service but not applied to P.A. 295 requirement. In all, the total amount of renewable energy in Michigan either online or expected to be by the end of 2013 is 1,925 MW.

Looking ahead to 2015, DTE expects to add an additional 330 MW of renewable energy (nearly all of which will be wind resources) through either self-build or power purchase agreements. Consumers Energy also has plans to bring online a 150 MW wind power facility by 2015. SNL Financials, which tracks energy projects as part of its services to industry and financial clients, reports an additional 4 renewable energy projects – all wind, totaling 390 MW – that are planned to come online by the end of 2015. Finally, the continued implementation of DTE's and Consumers' small-scale solar programs is expected to produce approximately 3.25 MW of additional distributed solar resources by 2015. These projects increase the total amount of renewable energy expected to be online in Michigan by 2015 to 2,798.25 MW. Additional renewable energy development by Michigan's electric providers as a result of P.A. 295 is unlikely due to the availability of inexpensive renewable energy credits (RECs) which will likely be used to meet any additional compliance requirements.

In terms of investment to date, the February 2013 MPSC report estimates that \$1.79 billion has been invested to bring 895 MW of new renewable energy projects online in Michigan through 2012. This is based on an assumed cost of \$2,000 per kW of installed capacity.¹ This estimate does not include the renewable energy projects that pre-date P.A. 295. Estimating the investments made to develop these projects is difficult due to (1) the long period of time over which these projects were developed (some, like the hydropower resources, date to the early 20th century), and (2) the lack of publicly available data for these projects.

For the 872.5 MW of new renewable energy projects planned through 2015, SNL Financials estimates an investment of \$2.39 billion. However, this equates to an average cost of more than \$2,700 per installed kW of capacity, which is considerably higher than current project costs reported in the February 2013 MPSC report and by the Lawrence Berkeley National Laboratory. In addition, this renewable energy capacity likely exceeds, by several hundred MW, what will be required to comply with P.A. 295. This additional investment is driven by market forces and the presence of strong wind resources in Michigan.

¹ The MPSC's estimate of \$2,000 per kW of installed capacity appears reasonable when compared to industry data. The Lawrence Berkeley National Laboratory data for installed wind project costs (\$/kW) from 2009 to 2012 were \$2,192, \$2,188, \$2,098 and \$1,755 respectively.

Using MPSC's estimated cost of \$2,000 per installed kW of capacity – an estimate that seems more reasonable in light of recent project costs in Michigan and surrounding areas – the investment will total \$1.75 billion. An additional small amount will be invested to continue DTE's and Consumers' small-scale solar programs. In all, current and future renewable energy developments to meet the requirements of P.A. 295 plus the additional investments driven by market forces, (but not including renewable resources developed prior to enactment of P.A. 295) will likely total between \$3.5 and 4.2 billion.

Resources:

- 1) Quackenbush, J.D., O.N. Isiogu, and G.R. White. 2013. *Report on the implementation of the P.A. 295 renewable energy standard and the cost-effectiveness of the energy standards*. Lansing, MI: Michigan Public Service Commission. Online at http://www.michigan.gov/documents/mpsc/Report_on_the_implementation_of_Wind_energy_resource_zones_2013_413124_7.pdf, accessed March 26, 2013.
- 2) Energy Information Administration. 2013. *Michigan state profile and energy estimates*. Online at <http://www.eia.gov/state/?sid=MI>; Accessed April 8, 2013.
- 3) DTE Energy. 2012. *Renewable energy projects made in – and for – Michigan*. Online at <http://www.dteenergy.com/pdfs/renewableMap.pdf>; accessed April 8, 2013.
- 4) Consumers Energy. 2013. *Renewable energy*. Online at <https://www.consumersenergy.com/content.aspx?id=1985>; accessed April 8, 2013.
- 5) SNL Financials. 2013 *Power project details: Detailed projects by state: Michigan*. Online at <http://www.snl.com/interactivex/bbsearch.aspx?activeTabIndex=2>; accessed April 9, 2013.
- 6) Wiser, R., and M. Bolinger. 2012. *2011 wind technologies market report*. Washington, DC: U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. Online at www1.eere.energy.gov/wind/pdfs/2011_wind_technologies_market_report.pdf, accessed March 24, 2013.